Accident Prevention Plus

Accident Prevention Plus, Inc. ("APP") was founded in 1993 and based in Hauppauge, New York with offices in the United Kingdom and France. APP is striving to become a leader in Data Recording and Data Reading Technologies. We design our products to promote safe and efficient driving practices, provide security for unauthorized use of vehicle, automatically monitor and record vehicle operational data for accident prevention, driver training, driver evaluation and maintenance purposes, and reduce the overall costs of maintaining and operating fleet vehicles.

Product Information

Accident Prevention Plus, Inc. develops, markets and sells a comprehensive line of on-board computer recording systems commonly known as the AP+Series. These systems were developed to:

- Promote safe and efficient driving practices
- Provide security for unauthorized operational use of a vehicle
- Automatically monitor and record vehicle operational data for accident prevention, driver training, driver evaluation and maintenance purposes
- Reduce the overall costs of maintaining and operating fleet vehicles
- Permanently record the behaviors of drivers in order to train them accordingly to their weak points for improving their performance and reducing accident rates
- Increase the efficiency and life of vehicles by permanently acquiring technical parameters that indicate when and how the vehicles are used

The AP+Series can be custom-designed to specific requirements by using individual operating parameters and are upgradeable to meet further needs of fleet management companies as they adapt to a changing world. The AP+Series have the ability to monitor, record and retrieve numerous types of data depending on the individual customer's specific need.

The Concept

The AP+ SERIES are programmable data recording systems composed of the following components. Electronic sensors are installed, where applicable, in the existing electrical system throughout various locations in the vehicle. A data logger is located either on or under the vehicle's dashboard. This unit is designed for acquiring the information delivered by the sensors. A smart card is given to each driver and contains all necessary information identifying the driver (name, driver's license category, fleet vehicle number, etc.).

As an option in starting the vehicle, the driver must insert the smart card into the smart card receptacle. If programmed to do so, the vehicle will not start without this initial step and will not operate in an unauthorized vehicle or by an unauthorized driver. This smart card gives a permanent image of both driver and vehicular patterns and can be read at any time. Additional protection for the fleet/safety manager is given through a backup system within the vehicle. This backup system can maintain driving events for several months. Upon completion of their route (either daily or weekly) the driver will insert the smart card into a reader that is usually at the main office. Our **custom designed software** is entirely **upgradable** and is written under the Windows™ environment. Reports are automatically formulated for the managers' review that include such categories as driver activity, vehicular activity, or even an overall picture of driver behavior in terms of safety. The collected data can then be evaluated for a precise analysis of vehicle condition and driving performance
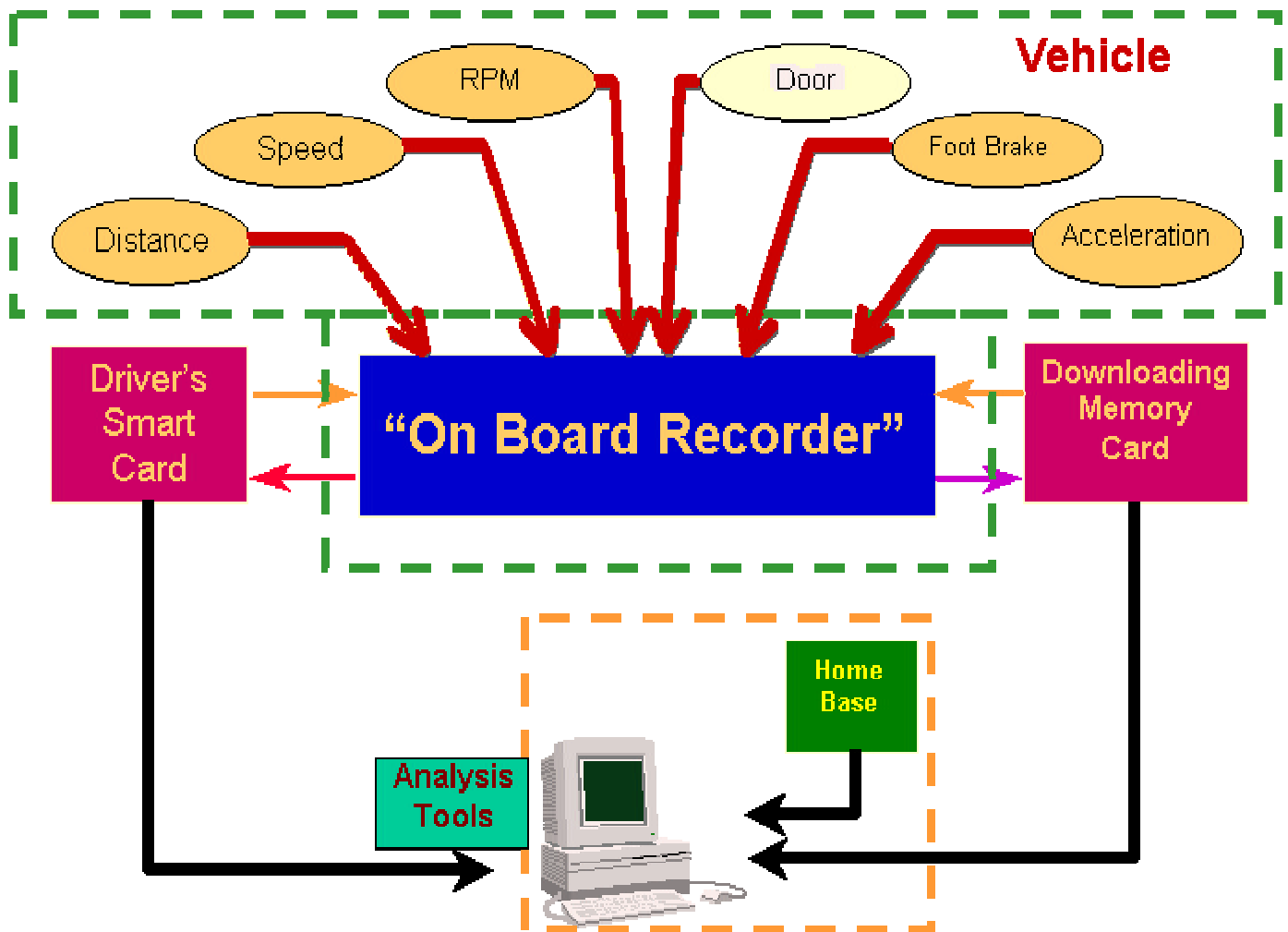
Features

APP-1000   APP-2000   APP-3000

AP+Series Operating Features

Driver's or Operator's Identification -
Through a Secured "Smart Card"
Company Name
Driver Name & Identification Number
Driver's License Classification
Employee Category

Downloading Procedure
  Through a High Capacity Memory Card

On-Board Computer's Main Functions

Recording of Black Boxes

- 50 Sec. Before & 10 Sec. After An Accident
- Driving Chronologies
- Idling Chronologies
- 20 Last Speed Violations
- Maximum Speed
- Maximum Deceleration
- Speed Histograms
- Engine Speed Histograms
- Foot Brake Intensity Histograms
- Foot Brake Occurrence/Speed Ranges
- Gear Position Histogram

Recording per Trip (Programmable condition)

- Driver's Identification
- Date & Time, First & Last Use of Vehicle
- Total Driving Time & Distance
- Total Idling Duration

- Maximum Speed
- Maximum Deceleration
- Dangerous Braking Occurrences
- Hard Braking Occurrence
- Distance/Speed Range Histogram
- Duration/Deceleration Intensity Histogram
- Duration/Engine Speed Range Histogram
- Braking Occur/Speed Range Histogram

Driver's Smart Card Functions

Recording on Card
- Distance Driven Per Trip
- Maximum Speed Reached
- Number of Speed Violations
- Number Of Driving Periods Above Selected Duration
- Speed Histograms
- Engine Speed Histogram (RPM)
- Foot Brake Intensity Histograms
- Foot Brake Occurrence Histogram

AP+ Series Hardware Characteristics

Frequency Inputs - Distance, RPM, and 2 customizable inputs

On/Off Inputs - Foot Brake, Lights, Reverse Gear, Power Take Off - 8 total inputs

Analog Inputs - Forward/Backward Acceleration, Lateral Acceleration - 6 customizable inputs.

Real Time Computerized - Acceleration / Deceleration, mile marker - 2 customizable inputs

Peripherals Inputs / Outputs - 2 Powered Outputs (vehicle-immobilization),

Buzzer Control (Programmable Alarms)

General Features - Operating Voltage 9 to 30 Volts DC, Operating Temperature Range from -25 to 85 Degrees Celsius, Data Storage Capacity (Internal Memory Size) 120 kB, Data Storage Capacity of the SmartCard 8 kB, Data Retention while Power Off 3 Years, Average Duration of Recording 3 months

FEATURES	APP1000	APP2000	APP3000
"Pulse Inputs"			
Distance/Speed	X	X	X
Engine RPM	X	X	X
Fuel Consumption (requires dedicated sensor)		X	X
Additional and Customized Inputs	N.A.	N.A.	1
TOTAL Inputs Available	**2**	**3**	**4**
"On/Off Inputs"			
Foot Brake	X	X	X
Lights	X	X	X
Reverse Gear	X	X	X
Power Off	X	X	X
Additional & Customizable Inputs	N.A.	4	4
TOTAL Inputs Available	**4**	**8**	**8**
"Analog Inputs"			
Dual Axis Accelerometer (+/-1g)	N.A.	N.A.	X
Additional & Customizable Inputs	N.A.	8	6
TOTAL Inputs Available	**0**	**8**	**8**
"Real Time Computerized Information"			
Acceleration/Deceleration	X	X	X
Gear Position (up to 22 positions)	X	X	X
Additional & Customizable Inputs	2	2	2
TOTAL Computerized Data	**4**	**4**	**4**
"Peripheral Inputs/Outputs"			

Powered Outputs (actuators activation)	2	2	2
Buzzer Control (programmable alarms)	1	1	1
General Features			
Operating Voltage: 9 to 30 Volts DC	X	X	X
Operating Temperature Range: -250 to 85 Celsius	X	X	X
Input Connectors for Automotive Application	X	X	X
Approximate Dimensions (HxWxD) in Inches	4x2x6	4x2x6	4x2x6
Data Storage Capacity (Internal Memory Size)	64 KB	120 KB	120 KB
Data Capacity of SmartCard	8 KB	8 KB	8 KB
Data Retention while Power "Off"	3 years	3 years	3 years
Average Duration of Recording	3 months	3 months	3 months

OPERATING FEATURES	APP1000	APP2000	APP3000
DRIVER'S IDENTIFICATION			
Secured Smart Card Containing • Company name • Driver's name • Identification # • Driver's license classification • Employee category	Option	Option	Option
DOWNLOAD PROCEDURE			
Through High Capacity Memory Card	X	X	X
DATA PROCESSING			
In "Real Time" While Smart Card Is In Reader	X	X	X
In "Batch" For Summary And Other Detailed Report	X	X	X
ON-BOARD COMPUTER'S MAIN FUNCTIONS			
Recording of Black Boxes (50 sec. before and 10 sec. after) Triggered by Strong Deceleration.	3 zones	3 zones	3 zones
Recording of:			
Examples of tasks to be processed by the system per vehicle and/or driver			
Driving Chronologies	X	X	X
Idling Chronologies	X	X	X
Speed Violations (the last 20)	X	X	X

Maximum Speed	X	X	X
Maximum Deceleration	X	X	X
Braking Occurrences	X	X	X
Speed Histogram	X	X	X
Engine Speed Histogram	X	X	X
Foot Brake Intensity Histogram	X	X	X
Foot Brake Occ./Speed Range	X	X	X
Gear Position Histogram	X	X	X
Customized Recording Format	Yes	Yes	Yes
Example of tasks to be processed by the system for each individual trip (programmable: default = calendar day			
Driver's Identification	X	X	X
Date & Time First Use Of Vehicle	X	X	X
Date & Time Last Use Of Vehicle	X	X	X
Total Driving Time & Distance	X	X	X
Maximum Speed	X	X	X
Maximum Deceleration	X	X	X
Dangerous Braking Occurrences	X	X	X
Hard Braking Occurrences	X	X	X
Distance/Speed Range Histogram	N.A.	X	X
Duration/Decel Intensity Histogram	X	X	X
Duration/Engine Speed Range Hist.	X	X	X
Braking Occurr/Speed Range Hist. Customized Recording Format	Yes	Yes	Yes
DRIVERS' SMART CARD RECORDING			
Total Distance Driven	X	X	X
Last vehicle used	X	X	X
Maximum Speed Reached	X	X	X
No. Of Speed Violations	X	X	X
No. Of Over Accelerations	X	X	X
No. Of Driving Pds. Above Selected Dur.	X	X	X
Speed Histogram	X	X	X
Engine Speed Histogram (Rpm)	X	X	X
Braking Intensity Histogram	X	X	X
Braking Occurrence Histogram	X	X	X
			X
			X

DATA ANALYSIS & MANAGEMENT SOFTWARE

The main function of this software is to analyze the data recorded by the AP+ Series products. This software has been developed to be very "user friendly" as a result of numerous years of engineering backgrounds as well as knowledge obtained from road professionals. D.A.M.S. is a 32 bit computing software tool that operates under the Microsoft Windows 95™, Windows 98™ or Windows NT™ environments in a single station mode and is an integral part of both the AP+ Series of recorders and the smart card/ memory card reader.

D.A.M.S. unique design provides the following capabilities:

- Management of your fleet in the form of a tree structure by Fleet, Department and Vehicle.
- Management of up to 32,000 Vehicles per fleet.
- Management of your drivers in the form of a tree structure by Fleet, Department and Driver.
- Management of up to 32,000 drivers.
- Drivers' identification via smart card.
- Data downloading via memory card.
- Quick analysis via smart card.
- Immediate detailed analysis.
- Daily, weekly, monthly and up to date history analysis.
- Fully monitored history per vehicle and driver.
- Full parameter setup of printed reports.
- Multi-user processing via data use identifier password.

The following are the minimal configuration capabilities for this software:

- Pentium 200MHz (or higher).
- 32 Mb (or higher) main memory capacity.
- 10 Mb (or higher) available on hard disk for software.
- 1 Gb available space on hard disk for the database.
- Minimal resolutio n 800 X 600 X 256 or 1024 X 768 X 256 (recommended) color monitor.
- One available RS232 cable port.
- One available 3.5HD diskette reader and one CD Rom reader.
- Microsoft Windows 95™, Windows 98™ or Windows NT™ installed.

D.A.M.S. allows you to organize by fleet, department, driver and vehicle. The downloading of this data is achieved through a memory card. This software provides a detailed analysis of both driver and vehicle data and can be fully customizable.

D.A.M.S. achieves the interfacing between ope rators and the AP+ Series installed in the vehicle. The D.A.M.S. graphic interface capability allows you to set up the parameters, calibrate and format your AP+ Series by a few clicks of your computer mouse. By the use of a tool box menu that may be opened from a vehicle file, you may entirely modify your AP+ Series physical configuration or observe the data recorded in real time.

D.A.M.S. allows you to analyze the recorded data at several levels. This analysis may occur second by second from any driver or vehicular abnormality in a generated report format.

An "event" is a task to be recorded by the AP+ Series system. Every event is ranged into a zone (vehicle zone, driver zone or trip zone) depending on the specific

recordings to be performed. Once data is recorded by an AP+ Series system and a Memory Card is inserted into the recorder to collect this data by your fleet manager, your manager will then download this data retained on the memory card by placing it in a Reader in the office. Each of these "events" have been recorded as data and is placed into chronologies, accumulations, histograms, or samplings for viewing.

D.A.M.S. also integrates a "history" generator. A "history" is the assembly of accumulated data. The "Vehicle" and "Driver" histories are entirely programmable and can be displayed in the form of a 50 columnar chart. D.A.M.S. can generate additional accumulated data on a daily, weekly, monthly or up-to-date time period. This can be done per vehicle and per driver.
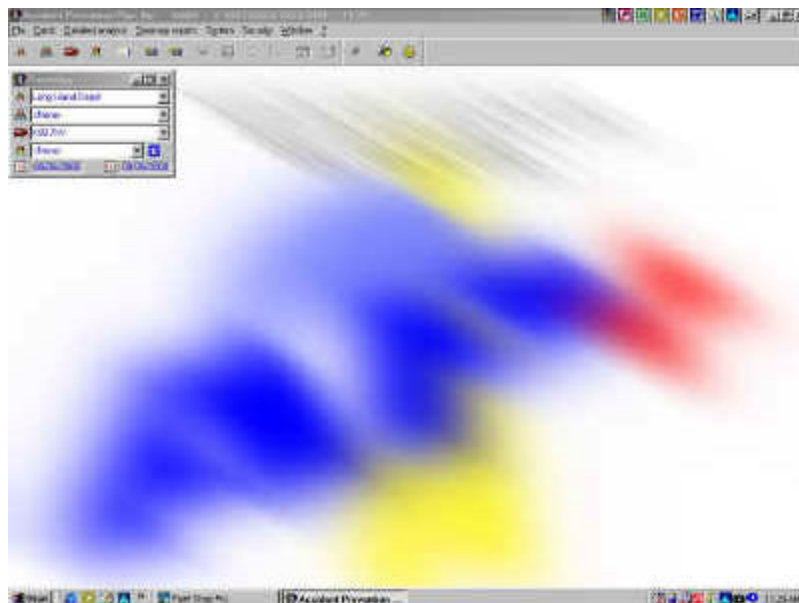
 In addition to the processing/analysis chain that is made of the detailed analysis and the history analysis, the AP+ Series provides you with the capabilities to run a quick analysis of the data recorded on the smart card allocated to each individual driver. Also, with the use of the smart card, you may set limitations for your vehicles and drivers.

The AP+ Series is fitted with multiple black boxes that simultaneously record the speed, rpm, deceleration, and gear box ratio. Each black box records and segregates data 50 seconds prior to an accident and 10 seconds after an accident.